

**Amendment to the Claims:**

The listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

1-26. Cancelled.

27. (Currently Amended) A method for constructing a reservoir model representative of an underground reservoir, including discretizing said reservoir by a set of grid cells, and associating with said reservoir model a permeability field constrained by a priori geologic data and dynamic-production data or pressure data obtained from well tests ~~collected in said reservoir by measurements and observations~~ comprising:

- a) constructing an initial reservoir model including generating a permeability field in accordance with a stochastic model, coherent with the a priori geologic data;
- b) identifying zones inside said reservoir;
- c) calculating effective permeabilities of said zones and carrying out, by means of a simulator, a simulation of fluid flows, to estimate corrections to be brought to said effective permeabilities to improve calibration in relation to said dynamic-production data or pressure data obtained from well tests; and
- d) propagating said corrections to said set of grid cells of said reservoir model, by means of an iterative optimization process comprising minimizing a

function which depends on said corrections, using a technique of gradual deformation of realizations of said stochastic model[.]; and

e) using said reservoir model, including said correction propagated to said set of grid cells, to develop said underground reservoir.

28. (Currently Amended) A method as claimed in claim 27, wherein said zones are defined either manually or automatically from said flow simulator, comprising using said reservoir model to develop an oil reservoir.

29. (Currently Amended) A method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator, and said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry and said zones are defined either manually or automatically from said flow simulator.

30. (Currently Amended) A method as claimed in claim 27, wherein flow simulation is carried out by means of a streamline simulator and said zones of said underground reservoir are identified by a set of grid cells traversed by one or more streamlines of fixed geometry.

31. (Previously Presented) A method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, within a framework of well tests.

32. (Previously Presented) A method as claimed in claim 27, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, within a framework of well tests.

33. (Previously Presented) A method as claimed in claim 29, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, within a framework of well tests.

34. (Previously Presented) A method as claimed in claim 30, wherein said zones are identified as volume portions on a periphery of wells running through said reservoir, within a framework of well tests.

35. (Previously Presented) A method as claimed in claim 27, wherein at least one gradual deformation parameter is assigned to each of said zones.

36. (Previously Presented) A method as claimed in claim 28, wherein at least one gradual deformation parameter is assigned to each of said zones.

37. (Previously Presented) A method as claimed in claim 29, wherein at least one gradual deformation parameter is assigned to each of said zones.

38. (Previously Presented) A method as claimed in claim 30, wherein at least one gradual deformation parameter is assigned to each of said zones.

39. (Previously Presented) A method as claimed in claim 31, wherein at least one gradual deformation parameter is assigned to each of said zones.

40. (Previously Presented) A method as claimed in claim 32, wherein at least one gradual deformation parameter is assigned to each of said zones.

41. (Previously Presented) A method as claimed in claim 33, wherein at least one gradual deformation parameter is assigned to each of said zones.

42. (Previously Presented) A method as claimed in claim 34, wherein at least one gradual deformation parameter is assigned to each of said zones.